



ORIGINAL COURSE IMPLEMENTATION DATE:

September 2015

REVISED COURSE IMPLEMENTATION DATE:

September 2024

COURSE TO BE REVIEWED (six years after UEC approval):

December 2020

Course outline form version: 28/10/2022

OFFICIAL UNDERGRADUATE COURSE OUTLINE FORM

Note: The University reserves the right to amend course outlines as needed without notice.

Course Code and Number: ELTR 201		Number of Credits: 3 Course credit policy (105)													
Course Full Title: Hydraulic and Pneumatic Control Systems Course Short Title: Hydraulics and Pneumatics															
Faculty: Faculty of Applied and Technical Studies		Department (or program if no department): Electronics													
Calendar Description: Fundamental fluid power principles, fluid power systems, including hydraulic and pneumatic components. Hands-on training with fluid power systems, identify components, read schematics, fluid power circuits, terminology, symbols, and calculations for force, velocity, and horsepower. Introductory control of pneumatics using PLCs.															
Prerequisites (or NONE):		ELTR 190.													
Corequisites (if applicable, or NONE):															
Pre/corequisites (if applicable, or NONE):															
Antirequisite Courses <i>(Cannot be taken for additional credit.)</i> Former course code/number: Cross-listed with: Equivalent course(s): <i>(If offered in the previous five years, antirequisite course(s) will be included in the calendar description as a note that students with credit for the antirequisite course(s) cannot take this course for further credit.)</i>		Course Details Special Topics course: No <i>(If yes, the course will be offered under different letter designations representing different topics.)</i> Directed Study course: No <i>(See policy 207 for more information.)</i> Grading System: Letter grades Delivery Mode: Face-to-face only Expected frequency: Fall only Maximum enrolment (for information only): 20													
Typical Structure of Instructional Hours <table border="1"><tr><td>Lecture/seminar</td><td>30</td></tr><tr><td>Supervised laboratory hours (science lab)</td><td>30</td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td>Total hours</td><td>60</td></tr></table>		Lecture/seminar	30	Supervised laboratory hours (science lab)	30							Total hours	60	Prior Learning Assessment and Recognition (PLAR) PLAR is available for this course.	
Lecture/seminar	30														
Supervised laboratory hours (science lab)	30														
Total hours	60														
Scheduled Laboratory Hours Labs to be scheduled independent of lecture hours: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes		Transfer Credit <i>(See bctransferguide.ca.)</i> Transfer credit already exists: No Submit outline for (re)articulation: No <i>(If yes, fill in transfer credit form.)</i>													
Department approval		Date of approval: October 27, 2023													
Faculty Council approval		Date of meeting: December 2023													
Undergraduate Education Committee (UEC) approval		Date of meeting: March 1, 2024													

Learning Outcomes *(These should contribute to students' ability to meet program outcomes and thus Institutional Learning Outcomes.)*

Upon successful completion of this course, students will be able to:

1. Analyze and specify control components in fluid power systems.
2. Analyze dynamics and characteristics of fluid flow.
3. Apply fluid mechanics to troubleshoot energy, power loss, and efficiency in hydraulic systems.
4. Demonstrate operation of basic hydraulic and pneumatic systems and the use of flow meters and pressure gauges.
5. Test and troubleshoot hydraulic and pneumatic system used in Agriculture setting.
6. Interpret schematics and troubleshoot systems.
7. Display a systematic approach to troubleshooting and design a schematic drawing of a working system.
8. Describe safety rules that need to be followed when working with individual hydraulic and pneumatic components.

Recommended Evaluation Methods and Weighting *(Evaluation should align to learning outcomes.)*

Assignments:	15%	Quizzes/tests:	35%	Lab work:	50%
	%		%		%

Details:

NOTE: The following sections may vary by instructor. Please see course syllabus available from the instructor.

Typical Instructional Methods *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Lectures and Lab work with occasional guest lecture

Texts and Resource Materials *(Include online resources and Indigenous knowledge sources. [Open Educational Resources](#) (OER) should be included whenever possible. If more space is required, use the [Supplemental Texts and Resource Materials form](#).)*

Type	Author or description	Title and publication/access details	Year
1. Textbook	Parr, E. A.	Hydraulics and Pneumatics: A Technician's and Engineer's Guide	2011
2.			
3.			
4.			
5.			

Required Additional Supplies and Materials *(Software, hardware, tools, specialized clothing, etc.)***Course Content and Topics**

Unit 1: Fundamental principles
 Unit 2: Hydraulic pumps and pressure regulation
 Unit 3: Air compressors, air treatment, and pressure regulation
 Unit 4: Control valves
 Unit 5: Actuators
 Unit 6: Process control
 Unit 7: Hydraulic and pneumatic accessories
 Unit 8: Safety, fault findings, and maintenance